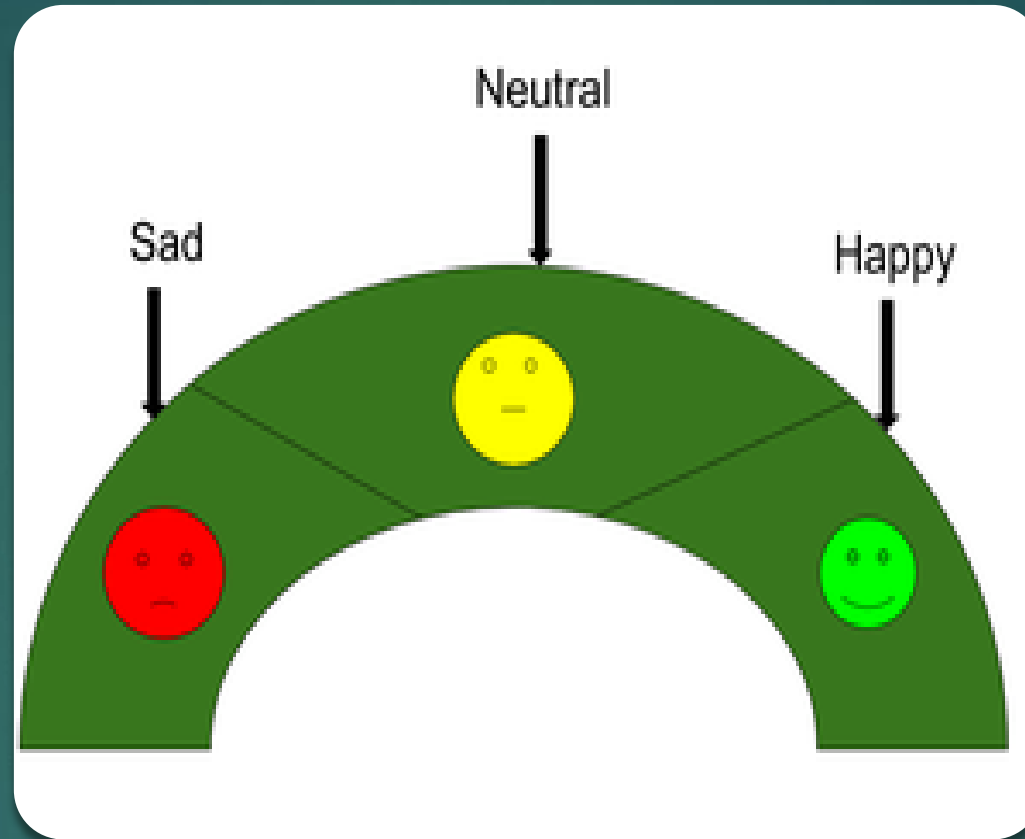# SENTIMENT ANAYLSIS

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What is Sentiment Analysis?

➢ Sentiment analysis is the process used digital text to determine the emotional tone or attitude of the message is positive, negative, or neutral. Sometimes detect the emotion like happiness anger , sadness etc.

➢ Presently, companies have huge volumes of text data like emails, customer support chat, social media comments, and reviews.

➢ It's Natural Language Processing (NLP) Technique.

➢ If we want to analyze whether a product is satisfying customer requirements, or is there a need for this product in the market. We can use sentiment analysis to monitor that product's reviews.

➢ Sentiment analysis is also efficient to use when there is a large set of unstructured data

Sentiment

Why is sentiment analysis important?

➢ Sentiment analysis, also known as opinion mining, is an important business intelligence tool that helps companies improve their products and services.

➢ 80% of the world's data is unstructured. The data needs to be analyzed and be in a structured manner whether it is in the form of emails, texts, documents, articles, and many more.

Why is sentiment analysis important?

➤ Sentiment Analysis is required as it stores data in an efficient, cost friendly.

➤ Sentiment analysis solves real-time issues and can help you solve all real-time scenarios.

Key Application of Sentiment Analysis

- ➢ Customer Feedback

- ➢ Brand Monitoring

- ➢ Market Research

- ➢ Political Analysis

- ➢ Customer Support

Technique Used in Sentiment Analysis

1. Lexicon-Based Approaches:

➢ These methods use predefined lists of words associated with positive or negative sentiments. The sentiment of a text is determined by the presence and frequency of these words.

➢ Lexicon i.e Complete set of meaningful units in a language.

Technique Used in Sentiment Analysis

2. Machine Learning Algorithms:

➤ Also Known as Supervised learning algorithms.

➤ Naive Bayes, Support Vector Machines (SVM), and deep learning models, are trained on labeled datasets to classify text into sentiment categories.

Technique Used in Sentiment Analysis

3. Deep Learning:

➢ Advanced models like Recurrent Neural Networks (RNNs), Long Short-Term Memory (LSTM) networks, and Transformers (e.g., BERT) are used for more accurate sentiment analysis, especially in complex and context-dependent texts.

Technique Used in Sentiment Analysis

4.**Hybrid Approaches**:

➢ Combining lexicon-based methods with machine learning models to leverage the strengths of both approaches.

Challenges in Sentiment Analysis

Sarcasm and Irony:

➤ Detecting sarcasm and irony is particularly challenging because the literal meaning of the text often contradicts the intended sentiment.

➤ It is extremely difficult for a computer to analyze sentiment in sentences that comprise sarcasm. Look the following sentence,

"*Yeah, great. It took three weeks for my order to arrive.*"

Challenges in Sentiment Analysis

Negation

Negation is the use of negative words to convey a reversal of meaning in the sentence. For example,

"I wouldn't say the subscription was expensive."

Sentiment analysis algorithms might have difficulty interpreting such sentences correctly, particularly if the negation happens across two sentences, such as,

" I thought the subscription was cheap. It wasn't."

Challenges in Sentiment Analysis

Context Understanding:

➢ Sentiment can be highly context-dependent. The same word or phrase can have different meanings in different contexts, making it difficult for algorithms to accurately determine sentiment.

Challenges in Sentiment Analysis

<u>Multipolarity:</u>

➢ Multipolarity occurs when a sentence contains more than one sentiment. For example, a product review reads, *"I'm happy with the sturdy build but not impressed with the color."*

➢ It becomes difficult for the software to interpret the underlying sentiment. You'll need to use aspect-based sentiment analysis to extract each entity and its corresponding emotion.

Tools and Libraries

➤ Python Libraries: - NLTK, Textblop SpaCy, Hugging Face Transformers.

➤ APIs : - Google Cloud Natural Language API , IBM Watson NLU, Amazon Comprehend.

Many Terms

➢ Opinion Extraction

➢ Opinion Mining

➢ Sentiment Mining

➢ Subjectively Analysis

Conclusion

➢ Sentiment analysis is a powerful tool that enables businesses, researchers, and organizations to gain valuable insights from textual data. By understanding the sentiments expressed in customer feedback, social media, reviews, and other text sources, stakeholders can make informed decisions, improve products and services, and enhance customer experiences.

Thank You